

MMMR

MORBIDITY AND MORTALITY WEEKLY REPORT

- 605 St. Louis Encephalitis Outbreak — Arkansas, 1991
607 Participation of High School Students in School Physical Education — United States, 1990

Epidemiologic Notes and Reports

St. Louis Encephalitis Outbreak — Arkansas, 1991

On August 2, 1991, a neurologist in Pine Bluff (Jefferson County) in central Arkansas notified the Arkansas Department of Health of two patients hospitalized with St. Louis encephalitis (SLE). A hospital chart review and heightened surveillance (i.e., notification of physicians and hospital infection-control coordinators in Jefferson and surrounding counties) subsequently identified 24 confirmed or probable cases of SLE. This report summarizes the findings of the ongoing outbreak investigation.

Cases were defined using standard case definitions for public health surveillance (1). Sixteen persons had confirmed SLE (including fever and signs and symptoms of encephalitis or aseptic meningitis and SLE viral-specific IgM in cerebrospinal fluid), and eight persons had probable cases (including these clinical characteristics and viral-specific IgM in serum).

Onset of symptoms for the 24 patients occurred from July 14 through August 17 (Figure 1). All patients resided or worked in Pine Bluff (estimated population: 57,000), and nine lived within a 1 square mile area. Fourteen (58%) patients were female. Eight (33%) cases occurred among persons ≥ 65 years of age (age range: 5 weeks–85 years). All patients were hospitalized; three have residual neurologic defects, and one patient with chronic myelogenous leukemia died. The crude SLE attack rate for persons in Pine Bluff was 39 per 100,000 population. Cases were clustered in low socioeconomic status census tracts.

On August 6, local and state health officials issued recommendations for the public to curtail evening outdoor activities and to apply insect repellent when outdoors. City residents were encouraged to mend screens and to remove containers that collect water. The Pine Bluff/Jefferson County vector-control office has intensified spraying throughout the city to control *Culex quinquefasciatus*, the suspected mosquito vector. An entomologic survey of Pine Bluff is in progress to measure the distribution and abundance of vector mosquitoes and viral infection rates in vectors. A door-to-door seroepidemiologic survey has been conducted in selected areas to determine the incidence of infection in residents, identify risk factors for infection and illness, and assess behavioral changes in response to the public health messages; analyses of these data are in progress.

Reported by: TE Townsend, MD, TP Bishop, MD, BD Higdem, Jefferson Regional Medical Center, Pine Bluff; JP Lofgren, MD, TC McChesney, DVM, State Epidemiologist, Arkansas Dept of Health.

St. Louis Encephalitis — Continued

Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases; Div of Field Epidemiology, Epidemiology Program Office, CDC.

Editorial Note: SLE is the leading cause of epidemic viral encephalitis in the United States. Fewer than 1% of infections are clinically apparent. Symptomatic illnesses range in severity from febrile illness and headache to aseptic meningitis or encephalitis. Seven percent of symptomatic cases are fatal (2).

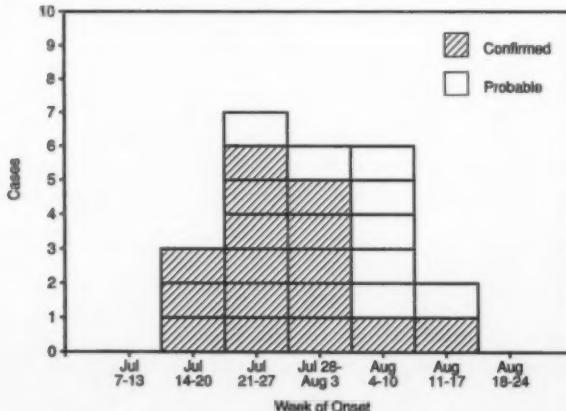
SLE is transmitted in three distinct cycles in the United States (3). Passerine birds (e.g., house sparrows [*Passer domesticus*]) are the principal vertebrate amplifying host in all locations. However, mosquito vectors differ in each of the three transmission cycles: in the rural West, *Cx. tarsalis* transmits SLE in an endemic pattern. In northern and southern regions of the central United States, *Cx. pipiens* and *Cx. quinquefasciatus*, respectively, are the principal vectors, and in Florida, *Cx. nigripalpus* is the primary vector.

SLE outbreaks occur at unpredictable intervals in the central United States and Florida. From 1954 through 1977, a series of regional outbreaks occurred at approximately 10-year intervals (1954–1957, 1964–1968, and 1974–1977) (3,4). Since 1977, outbreaks have occurred at irregular intervals—on the Gulf Coast in 1980 and 1986 and in Houston and in Florida in 1990. Although 18 SLE cases occurred in scattered geographic areas of Arkansas in 1975, the outbreak in Pine Bluff in 1991 is the first localized epidemic reported from the state.

The epidemiologic characteristics of the outbreak in Pine Bluff are typical of *Cx. quinquefasciatus*-borne SLE in the Mississippi River valley. These outbreaks frequently are focused in older neighborhoods where open drainage ditches and peridomestic mosquito breeding sites (e.g., discarded containers) may be prevalent. Open house foundations, which provide mosquito resting sites, and inadequately screened residences without air conditioning are additional risk factors (3–5).

Advanced age is the most clearly defined host factor associated with neuroinvasive SLE. Although SLE attack rates increase with age and mortality is greatest among the elderly, the biologic basis for this increased risk is unknown.

FIGURE 1. Cases of St. Louis encephalitis, by week of onset — Pine Bluff, Arkansas, July and August 1991



St. Louis Encephalitis — Continued

Following the nationwide SLE outbreak in 1975, state and local surveillance systems were established to monitor viral transmission in the enzootic cycle. The premise of these systems is that epidemic transmission can be predicted by identifying viral activity in vector mosquitoes and vertebrate amplifying hosts. The potential utility of this approach was demonstrated in 1986 in Harris County, Texas, and in 1990 in Houston and in Florida (6,7). Outbreaks in these locations were predicted from observations of rising mosquito rates or seroconversions in sentinel chickens.

Through September 1991, surveillance in Mobile, Alabama; Florida; Louisiana; and Memphis has not detected substantial levels of viral transmission and/or outbreaks. The absence of viral transmission in areas of Arkansas other than Pine Bluff and in surrounding states indicates the potential for focal transmission and underscores the need for local programs of surveillance and control (8).

References

1. CDC. Case definitions for public health surveillance. MMWR 1990;39(no. RR-13):11-2.
2. Brinker KR, Monath TP. The acute disease. In: Monath TP, ed. St. Louis encephalitis. Washington, DC: American Public Health Association, 1980:503-34.
3. Monath TP. Epidemiology. In: Monath TP, ed. St. Louis encephalitis. Washington, DC: American Public Health Association, 1980:239-312.
4. Tsai TF, Mitchell CJ. St. Louis encephalitis. In: Monath TP, ed. The arboviruses: epidemiology and ecology. Boca Raton, Florida: CRC Press, 1989:113-44.
5. Tsai TF. Arboviral infections in the United States. Infect Dis Clin N Am 1991;5:73-102.
6. CDC. St. Louis encephalitis—Baytown and Houston, Texas. MMWR 1986;35:693-5.
7. CDC. Update: St. Louis encephalitis—Florida and Texas, 1990. MMWR 1990;39:756-9.
8. Smith GC, Francy DB, Campos EG, Katona P, Calisher CH. Correlation between human cases and antibody prevalence in house sparrows during a focal outbreak of St. Louis encephalitis in Mississippi, 1979. Mosquito News 1983;43:322-5.

Health Objectives for the Nation

**Participation of High School Students
in School Physical Education — United States, 1990**

Regular physical activity increases a person's ability to perform daily activities with greater vigor and may reduce the risk for specific health problems, including coronary heart disease (1), hypertension (2), noninsulin-dependent diabetes mellitus (3), colon cancer (4), and depression (5), as well as lower all-cause death rates (6). In addition to extracurricular activities (e.g., sports and recreational organizations), high school physical education (PE) classes provide an opportunity to ensure a minimal, regular amount of desirable physical activity and help establish physical activity patterns that may extend into adulthood. This report examines the prevalence of self-reported enrollment, attendance, and participation in PE classes by students in grades 9-12.

The national school-based Youth Risk Behavior Survey (YRBS) is a component of the Youth Risk Behavior Surveillance System, which periodically measures the prevalence of priority health-risk behaviors among youth through comparable national, state, and local surveys (7). In the 1990 national school-based YRBS, a three-stage sample design was used to obtain a representative sample of 11,631 students in grades 9-12 in the 50 states, the District of Columbia, Puerto Rico, and the Virgin

(Continued on page 613)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending August 31, 1991, with historical data — United States

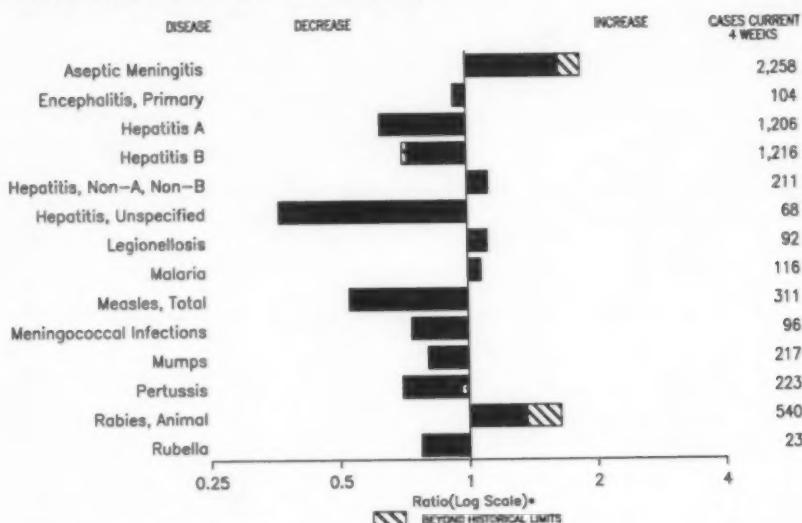


TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending August 31, 1991 (35th Week)

	Cum. 1991		Cum. 1991
AIDS	30,334	Measles: imported	156
Anthrax	-	indigenous	7,984
Botulism: Foodborne	12	Plague	2
Infant	51	Poliomyelitis, Paralytic*	-
Other	4	Pitักษ	59
Brucellosis	46	Rabies, human	2
Cholera	17	Syphilis, primary & secondary	27,460
Congenital rubella syndrome	13	Syphilis, congenital, age < 1 year	12
Diphtheria	2	Tetanus	29
Encephalitis, post-infectious	61	Toxic shock syndrome	205
Gonorrhea	382,670	Trichinosis	57
<i>Haemophilus influenzae</i> (invasive disease)	2,094	Tuberculosis	14,790
Hansen Disease	103	Tularemia	114
Leptospirosis	38	Typhoid fever	255
Lyme Disease	5,136	Typhus fever, tickborne (RMSF)	407

*Three suspected cases of poliomyelitis have been reported in 1991; none of the 8 suspected cases in 1990 have been confirmed to date. Five of the 13 suspected cases in 1989 were confirmed and all were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending August 31, 1991, and September 1, 1990 (35th Week)

Reporting Area	AIDS	Aseptic Menin- gitis		Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel- losis		Lyme Disease	
		Cum. 1991	Cum. 1991	Primary	Post-in- fectious	Cum. 1991	Cum. 1990	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	
UNITED STATES	30,334	7,839	564	61	392,670	456,607	15,898	11,166	1,970	889	772	5,136			
NEW ENGLAND	1,261	850	23	1	9,251	12,476	393	586	54	25	51	1,032			
Maine	38	62	3	-	113	148	16	15	2	-	2	-			
N.H.	33	90	5	-	154	144	24	19	5	-	6	28			
Vt.	16	108	3	-	40	38	20	12	6	-	2	4			
Mass.	716	244	10	1	3,096	5,145	167	406	29	22	38	100			
R.I.	63	259	-	-	775	778	73	19	10	3	3	107			
Conn.	395	7	2	-	4,472	6,223	73	115	2	-	-	793			
MID. ATLANTIC	8,168	1,192	42	11	45,868	61,121	1,486	991	198	15	210	2,975			
Upstate N.Y.	1,022	562	18	7	8,473	9,473	603	386	117	9	73	1,910			
N.Y. City	4,709	182	1	-	16,548	25,967	494	145	5	-	24	-			
N.J.	1,682	-	-	-	7,968	10,132	177	228	42	-	23	533			
Pa.	755	448	23	4	12,879	15,549	212	232	34	6	90	532			
E.N. CENTRAL	2,239	1,520	170	7	73,779	86,413	2,069	1,320	319	40	170	150			
Ohio	403	592	63	2	22,832	25,506	277	292	135	16	81	88			
Ind.	216	114	14	1	7,755	7,402	284	159	1	1	13	8			
Ill.	1,135	269	52	4	22,261	27,521	883	195	49	3	15	5			
Mich.	371	472	37	-	16,721	19,955	219	410	84	20	33	49			
Wis.	114	73	4	-	4,210	6,029	406	264	50	-	28	-			
W.N. CENTRAL	793	412	38	7	19,864	23,248	1,623	486	211	18	36	198			
Minn.	170	70	19	-	1,995	2,907	283	54	11	2	5	55			
Iowa	80	85	-	4	1,363	1,735	39	33	8	3	10	14			
Mo.	437	186	10	3	11,946	13,858	441	318	185	8	11	120			
N. Dak.	4	5	2	-	30	94	32	4	4	1	1	-			
S. Dak.	1	7	4	-	232	156	586	6	1	-	3	-			
Nebr.	38	20	2	-	1,268	1,170	174	28	1	-	5	-			
Kans.	63	39	1	-	9,840	3,330	69	43	1	4	1	9			
S. ATLANTIC	7,306	1,469	111	27	118,855	130,245	1,151	2,331	270	179	123	407			
Del.	53	47	2	-	1,850	2,079	7	32	4	2	2	40			
Md.	702	141	18	1	12,023	14,643	202	277	48	13	26	157			
D.C.	461	46	1	-	6,422	8,922	56	114	1	1	5	1			
Va.	546	234	30	3	11,904	12,337	120	145	23	124	7	87			
W. Va.	46	23	10	-	809	819	16	39	2	8	-	24			
N.C.	351	193	24	-	23,908	20,396	117	355	92	-	14	57			
S.C.	240	32	-	-	9,714	10,551	31	502	16	3	25	6			
Ga.	1,028	212	7	2	28,102	28,598	145	357	37	-	13	21			
Fla.	3,879	541	19	21	24,123	31,900	457	510	47	28	32	14			
E.S. CENTRAL	744	518	25	-	38,796	39,395	156	913	247	3	40	81			
Ky.	124	117	7	-	4,014	4,528	24	124	5	2	15	32			
Tenn.	236	166	13	-	12,947	11,719	96	671	223	-	10	36			
Ala.	237	207	5	-	12,193	13,671	30	109	15	1	14	13			
Miss.	147	28	-	-	9,642	9,477	6	9	4	-	1	-			
W.S. CENTRAL	2,934	984	60	1	45,034	49,287	2,233	1,518	86	175	31	52			
Ark.	129	50	19	-	5,515	5,831	207	70	2	5	7	16			
La.	507	86	11	-	10,047	9,187	88	208	6	5	6	1			
Okla.	143	2	3	-	4,646	4,313	188	162	37	12	9	27			
Tex.	2,155	846	27	1	24,826	29,856	1,750	1,078	41	153	9	8			
MOUNTAIN	829	145	14	2	8,223	9,711	2,513	679	106	104	59	11			
Mont.	22	10	1	-	70	118	65	50	4	5	4	-			
Idaho	17	-	-	-	97	93	66	54	1	-	3	1			
Wyo.	11	-	-	-	66	121	90	6	-	-	-	8			
Colo.	304	51	4	1	2,313	2,761	393	99	46	17	13	-			
N. Mex.	65	16	-	-	723	867	643	155	10	29	2	-			
Ariz.	178	36	9	1	3,043	3,705	803	122	15	42	22	-			
Utah	82	12	-	-	214	282	196	53	11	11	4	-			
Nev.	160	21	-	-	1,697	1,784	255	140	19	-	11	2			
PACIFIC	6,050	749	81	5	33,200	44,801	4,274	2,342	479	310	52	230			
Wash.	395	-	6	1	2,927	3,997	404	298	105	18	3	2			
Oreg.	168	-	-	-	1,339	1,710	271	218	86	8	2	-			
Calif.	5,346	685	73	4	27,638	37,822	3,488	1,768	271	283	45	228			
Alaska	515	30	2	-	672	814	85	24	13	1	-	-			
Hawaii	125	34	-	-	524	458	26	34	4	-	2	-			
Guam	2	-	-	-	200	-	-	-	-	-	-	-			
P.R.	1,029	188	2	3	399	460	69	323	143	40	-	-			
V.I.	13	-	-	-	269	292	1	9	-	-	-	-			
Amer. Samos	-	-	-	-	-	69	-	-	-	-	-	-			
C.N.M.I.	-	-	-	-	-	154	-	-	-	-	-	-			

N: Not notifiable

U: Unavailable

C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending August 31, 1991, and September 1, 1990 (35th Week)

Reporting Area	Malaria	Measles (Rubeola)				Menin-		Mumps		Pertussis			Rubella			
		Indigenous		Imported*		Total	Goccal	Infections	1991	Cum.	1991	1991	Cum.	1990	1991	Cum.
	Cum. 1991	1991	Cum. 1991	1991	Cum. 1991	Cum. 1990	1991	Cum. 1991	1991	Cum. 1991	1991	Cum. 1990	1991	Cum. 1991	1991	Cum. 1990
UNITED STATES	761	104	7,984	3	156	20,154	1,486	30	3,008	60	1,516	2,554	7	1,080	782	
NEW ENGLAND	52	2	52	1	12	282	113	-	23	10	225	272	-	4	8	
Maine	1	-	2	-	-	29	9	-	-	-	48	10	-	-	1	
N.H.	2	-	-	-	-	8	12	-	3	-	17	40	-	1	1	
Vt.	4	-	5	-	-	1	13	-	4	-	4	6	-	-	-	
Mass.	24	2	25	11	10	24	62	-	1	7	134	189	-	2	2	
R.I.	7	-	2	-	-	30	1	-	3	-	-	2	-	1	1	
Conn.	14	-	18	-	2	190	16	-	12	3	22	15	-	1	3	
MID. ATLANTIC	115	25	4,298	-	6	1,318	156	1	226	1	124	400	-	559	11	
Upstate N.Y.	32	-	334	-	4	313	60	1	81	1	80	277	-	537	10	
N.Y. City	44	25	1,700	-	-	326	9	-	-	-	-	-	-	-	-	
N.J.	30	-	730	-	1	308	32	-	54	-	1	28	-	-	-	
Pa.	9	-	1,534	-	1	371	35	-	91	-	43	95	-	22	1	
E.N. CENTRAL	68	-	69	-	11	3,489	230	2	272	2	248	708	-	180	31	
Ohio	13	-	1	-	2	537	77	2	62	2	87	139	-	147	1	
Ind.	3	-	-	-	2	412	19	-	6	-	58	90	-	1	-	
Ill.	23	-	26	-	-	1,326	66	-	104	-	47	272	-	6	18	
Mich.	16	-	41	-	-	473	48	-	81	-	24	60	-	25	9	
Wis.	3	-	2	-	7	751	20	-	19	-	32	147	-	1	3	
W.N. CENTRAL	24	-	34	-	6	798	81	1	80	4	112	121	1	17	14	
Minn.	7	-	9	-	5	321	17	-	16	1	43	21	-	6	9	
Iowa	4	-	15	-	-	26	8	1	16	-	13	17	1	6	4	
Mo.	6	-	-	-	1	98	29	-	26	1	38	66	-	5	-	
N. Dak.	1	-	-	-	-	-	1	-	2	-	2	2	-	-	1	
S. Dak.	1	-	-	-	-	23	2	-	1	-	3	1	-	-	-	
Nebr.	1	-	1	-	-	106	6	-	5	2	7	5	-	-	-	
Kans.	4	-	9	-	-	224	18	-	24	-	6	9	-	-	-	
S. ATLANTIC	162	6	435	-	20	1,186	274	12	1,067	14	178	196	-	13	18	
Del.	2	-	21	-	-	11	2	-	6	-	-	8	-	-	-	
Md.	48	-	173	-	1	210	27	2	206	4	46	49	-	6	2	
D.C.	9	-	-	-	-	22	11	2	23	-	-	14	-	1	1	
Va.	32	-	24	-	5	75	28	-	49	-	18	15	-	-	1	
W. Va.	2	-	-	-	-	6	12	-	16	1	9	14	-	-	-	
N.C.	12	2	38	-	3	30	49	5	223	2	25	80	-	2	-	
S.C.	9	-	13	-	-	4	28	-	345	-	10	5	-	-	-	
Ge.	16	-	10	-	5	282	56	-	38	4	33	24	-	-	-	
Fla.	32	4	156	-	6	546	61	3	161	3	37	29	-	4	14	
E.S. CENTRAL	17	-	7	-	2	153	97	-	155	4	57	108	-	100	3	
Ky.	2	-	1	-	1	34	35	-	-	-	-	-	-	-	-	
Tenn.	9	U	6	U	1	71	30	U	127	U	17	49	U	100	3	
Ala.	6	-	-	-	-	22	31	-	8	4	40	54	-	-	-	
Miss.	-	-	-	-	-	26	1	-	20	-	6	6	-	-	-	
W.S. CENTRAL	50	20	168	-	14	4,082	110	4	328	3	45	88	-	5	66	
Ari.	5	-	-	-	5	42	16	-	40	-	4	8	-	1	3	
La.	13	-	-	-	-	10	23	-	22	1	12	19	-	-	-	
Okla.	7	-	-	-	-	173	13	-	13	2	23	30	-	-	1	
Tex.	25	20	168	-	9	3,867	58	4	253	-	6	31	-	4	62	
MOUNTAIN	32	46	995	-	19	902	58	6	286	3	162	218	6	12	107	
Mont.	1	-	-	-	-	1	9	-	-	-	2	26	-	-	13	
Idaho	2	-	405	-	2	26	7	-	8	-	23	37	-	2	49	
Wyo.	-	-	1	-	2	15	1	-	3	-	3	-	-	-	-	
Colo.	9	-	1	-	5	137	11	4	122	2	71	77	1	1	4	
N. Mex.	6	-	117	-	5	93	8	N	N	-	29	16	-	-	-	
Ariz.	11	-	274	-	-	290	16	2	128	-	8	48	2	2	32	
Utah	2	46	179	-	4	127	-	-	13	1	24	10	3	3	1	
Nev.	1	-	18	-	1	213	6	-	12	-	2	4	-	4	8	
PACIFIC	251	5	1,926	2	66	7,924	367	4	561	19	365	442	-	200	524	
Wash.	17	-	46	-	15	254	50	2	154	8	91	110	-	8	-	
Oreg.	5	1	42	21	31	212	45	N	N	6	54	52	-	2	9	
Calif.	225	4	1,834	-	12	7,366	263	2	378	5	173	238	-	185	502	
Alaska	-	-	-	-	3	80	7	-	10	-	12	4	-	1	-	
Hawaii	4	-	4	-	5	12	2	-	19	-	35	38	-	4	13	
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	-	
P.R.	1	-	93	-	1	1,034	15	-	9	7	41	6	-	1	-	
V.I.	2	U	-	U	2	24	-	U	-	U	-	U	-	-	-	
Amer. Samoa	-	U	-	U	-	521	-	U	-	U	-	U	-	-	-	
C.N.M.	-	U	-	U	-	-	-	U	-	U	-	4	U	-	-	

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable

U: Unavailable

¹International

²Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending August 31, 1991, and September 1, 1990 (35th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxi- shock Syndrome	Tuberculosis		Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSE)	Rabies, Animal
	Cum. 1991	Cum. 1990		Cum. 1991	Cum. 1990				
UNITED STATES	27,460	32,953	205	14,790	15,506	114	255	407	4,778
NEW ENGLAND	700	1,182	10	405	350	2	27	5	48
Maine	-	5	4	30	-	-	1	-	-
N.H.	12	44	1	5	3	-	1	-	2
Vt.	1	1	-	4	7	-	-	-	-
Mass.	321	458	5	187	182	2	24	4	-
R.I.	39	14	-	59	43	-	-	-	-
Conn.	327	660	-	120	105	-	1	1	46
MID. ATLANTIC	4,316	6,470	32	3,431	3,673	1	48	11	1,415
Upstate N.Y.	103	613	15	238	284	1	9	6	524
N.Y. City	2,148	2,997	1	2,130	2,318	-	25	-	-
N.J.	896	1,064	-	562	598	-	11	2	651
Pa.	1,169	1,796	16	481	473	-	3	3	240
E. N. CENTRAL	3,317	2,360	39	1,503	1,474	6	15	33	105
Ohio	457	376	19	214	253	1	2	20	14
Ind.	103	58	-	147	128	-	-	9	8
Ill.	1,539	940	12	787	745	3	4	3	24
Mich.	877	733	8	289	289	2	8	1	23
Wis.	341	253	-	66	59	-	1	-	36
W.N. CENTRAL	493	347	32	349	407	39	5	27	620
Minn.	47	62	7	68	60	1	2	-	221
Iowa	48	45	6	52	42	-	-	1	123
Mo.	351	179	10	147	210	32	1	16	15
N. Dak.	-	1	-	5	16	-	-	-	70
S. Dak.	1	1	1	26	9	4	-	-	140
Nebr.	11	9	1	13	15	-	2	4	11
Kans.	35	50	7	40	46	2	-	5	40
S. ATLANTIC	8,351	10,697	19	2,815	2,874	4	47	182	1,001
Del.	110	128	1	20	29	-	-	-	113
Md.	664	768	1	268	232	-	8	21	378
D.C.	524	717	1	126	99	-	2	-	8
Va.	605	630	3	230	252	-	8	9	180
W. Va.	21	11	-	46	51	-	1	4	42
N.C.	1,331	1,207	8	379	363	1	2	99	11
S.C.	1,057	689	2	275	318	1	3	29	74
Ge.	2,058	2,719	-	566	479	1	5	19	171
Fla.	1,981	3,828	3	925	1,051	1	18	1	24
E.S. CENTRAL	3,118	2,898	9	1,054	1,112	13	2	72	670
Ky.	66	64	4	236	269	4	2	20	34
Tenn.	1,023	1,168	5	323	277	8	-	38	29
Ala.	1,187	890	-	276	360	1	-	14	607
Miss.	842	776	-	219	216	-	-	-	-
W.S. CENTRAL	5,037	5,488	14	1,836	1,901	30	18	68	456
Ark.	478	366	3	158	236	20	-	11	26
La.	1,676	1,687	-	178	236	-	3	-	5
Oklahoma	128	175	4	118	135	10	1	57	133
Tex.	2,755	3,260	7	1,362	1,294	-	14	-	292
MOUNTAIN	403	631	26	400	360	14	7	7	148
Mont.	6	-	1	6	22	7	-	5	32
Idaho	3	6	-	4	10	-	-	-	1
Wyo.	8	1	-	3	4	1	-	-	61
Colo.	58	38	5	33	20	2	1	2	12
N. Mex.	24	32	6	54	74	-	1	-	3
Ariz.	263	455	4	224	154	1	4	-	26
Utah	5	8	10	30	22	3	-	-	7
Nav.	36	91	-	46	44	-	1	-	4
PACIFIC	1,725	2,880	24	2,987	3,385	5	86	2	315
Wash.	111	269	3	194	189	2	4	1	1
Oreg.	52	101	-	75	89	2	4	1	4
Calif.	1,554	2,482	21	2,550	2,937	1	75	-	306
Alaska	4	13	-	40	35	-	-	-	3
Hawaii	4	15	-	138	115	-	3	-	1
Guam	-	2	-	33	-	-	-	-	-
P.R.	306	204	-	157	66	-	9	-	48
V.I.	77	8	-	2	4	-	-	-	-
Amer. Samoa	-	-	-	-	13	-	-	-	-
C.N.M.I.	-	3	-	-	44	-	-	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending August 31, 1991 (35th Week)

Reporting Area	All Causes, By Age (Years)					P&I**	Reporting Area	All Causes, By Age (Years)					P&I**		
	All Ages	>65	45-64	25-44	1-24			All Ages	>65	45-64	25-44	1-24	<1		
NEW ENGLAND	595	402	110	56	14	13	39	S. ATLANTIC	1,465	868	295	182	66	52	70
Boston, Mass.	163	97	36	19	4	7	15	Atlanta, Ga. ^{\$}	U	U	U	U	U	U	U
Bridgeport, Conn.	39	29	6	3	1	-	3	Baltimore, Md.	314	175	58	50	22	9	30
Cambridge, Mass.	32	24	5	3	-	-	4	Charlotte, N.C.	70	40	19	7	2	2	2
Fall River, Mass.	27	18	7	2	-	-	1	Jacksonville, Fla.	110	69	18	14	5	4	7
Hartford, Conn.	47	31	9	6	-	-	1	Miami, Fla.	128	78	29	10	4	7	2
Lowell, Mass.	29	22	2	4	1	-	1	Norfolk, Va.	60	36	11	8	2	3	5
Lynn, Mass.	26	19	7	-	-	-	1	Richmond, Va.	72	49	14	7	1	1	1
New Bedford, Mass.	30	24	2	4	-	-	2	Savannah, Ga.	47	23	10	6	2	5	2
New Haven, Conn.	53	28	10	6	5	-	4	St. Petersburg, Fla.	53	45	3	2	2	1	-
Providence, R.I.	35	27	5	1	2	-	3	Tampa, Fla.	186	124	37	14	6	5	15
Somerville, Mass.	4	1	2	1	-	-	1	Washington, D.C.	393	210	89	59	20	15	8
Springfield, Mass.	42	29	8	3	1	-	2	Wilmington, Del.	32	19	7	5	-	-	-
Watertown, Conn.	30	24	5	1	-	-	1								
Worcester, Mass.	38	29	6	3	-	-	4								
MID. ATLANTIC	2,667	1,720	501	288	90	65	98	E.S. CENTRAL	724	454	159	63	24	24	43
Albany, N.Y.	39	31	6	-	-	-	2	Birmingham, Ala.	112	55	36	15	2	4	2
Allentown, Pa.	19	14	3	2	-	-	2	Chattanooga, Tenn.	73	47	13	5	4	4	5
Buffalo, N.Y.	100	78	10	8	1	-	3	Knoxville, Tenn.	59	46	11	2	-	-	7
Camden, N.J.	43	23	9	7	1	-	3	Louisville, Ky.	68	33	18	11	3	3	3
Elizabeth, N.J.	13	10	1	2	-	-	1	Memphis, Tenn.	160	97	33	13	9	8	14
Erie, Pa. ^t	31	25	6	-	-	-	1	Mobile, Ala.	82	51	18	8	2	3	3
Jersey City, N.J.	45	29	10	2	1	-	3	Montgomery, Ala.	49	40	7	-	-	-	-
New York City, N.Y.	1,267	778	256	166	48	19	40	Nashville, Tenn.	121	85	23	9	2	2	9
Newark, N.J.	43	12	9	5	-	-	2								
Paterson, N.J.	27	20	2	5	-	-	2								
Philadelphia, Pa.	593	379	109	55	22	25	17								
Pittsburgh, Pa. ^t	54	34	12	5	1	-	2								
Reading, Pa.	40	30	10	-	-	-	5								
Rochester, N.Y.	136	106	16	11	2	-	1								
Schenectady, N.Y.	23	14	5	2	2	-	1								
Scranton, Pa. ^t	16	15	1	-	-	-	1								
Syracuse, N.Y.	110	71	20	11	6	-	2								
Trenton, N.J.	28	20	6	1	1	-	1								
Utica, N.Y.	18	13	4	1	-	-	1								
Yonkers, N.Y.	22	18	3	1	-	-	1								
E.N. CENTRAL	2,086	1,236	398	238	149	67	84	MOUNTAIN	716	449	127	75	42	23	41
Akron, Ohio	47	37	6	3	1	-	1	Albuquerque, N.M.	92	60	9	11	10	2	8
Canton, Ohio	28	22	6	-	-	-	3	Colorado Springs, Colo.	46	30	11	2	1	2	7
Chicago, Ill.	519	194	103	112	98	12	12	Denver, Colo.	115	73	21	12	6	3	5
Cincinnati, Ohio	129	93	19	6	2	-	3	Las Vegas, Nev.	123	66	29	12	4	2	5
Cleveland, Ohio	141	91	32	12	4	-	3	Ogden, Utah	23	18	2	1	1	1	4
Columbus, Ohio	180	119	39	15	2	-	3	Phoenix, Ariz.	158	97	25	21	9	6	1
Dayton, Ohio ^s	U	U	U	U	U	-	1	Pueblo, Colo.	13	10	3	-	-	-	-
Detroit, Mich.	233	135	43	34	13	8	8	Salt Lake City, Utah	36	16	11	4	2	3	4
Evansville, Ind.	35	26	6	2	-	-	1	Tucson, Ariz.	110	79	16	12	1	2	7
Fort Wayne, Ind.	55	35	10	3	3	4	4								
Gary, Ind.	21	12	6	2	1	-	1								
Grand Rapids, Mich.	60	40	13	3	-	-	4								
Indianapolis, Ind.	187	114	37	14	11	11	11								
Madison, Wis.	47	29	9	5	4	-	4								
Milwaukee, Wis.	114	87	18	5	-	-	4								
Peoria, Ill.	41	23	6	5	3	-	4								
Rockford, Ill.	49	32	12	2	1	-	2								
South Bend, Ind.	44	33	6	4	1	-	3								
Toledo, Ohio	92	60	19	7	5	-	1								
Youngstown, Ohio	66	54	8	4	-	-	3								
W.N. CENTRAL	729	517	131	46	18	17	13	SACIFIC	1,258	827	212	133	52	33	70
Des Moines, Iowa	56	40	9	4	1	2	2	Berkeley, Calif.	12	6	6	-	-	-	-
Duluth, Minn.	25	20	3	1	1	-	1	Fresno, Calif.	52	30	11	4	6	1	2
Kansas City, Kans.	33	20	10	1	2	-	1	Glenarden, Calif. ^{\$}	U	U	U	U	U	U	U
Kansas City, Mo.	107	72	18	10	4	3	3	Honolulu, Hawaii	76	54	14	6	2	-	7
Lincoln, Nebr.	29	23	6	-	-	-	1	Long Beach, Calif.	86	57	14	9	3	3	6
Minneapolis, Minn.	167	119	33	11	3	-	3	Los Angeles, Calif. ^{\$}	U	U	U	U	U	U	U
Omaha, Nebr.	114	82	20	7	4	1	10	Oakland, Calif. ^{\$}	U	U	U	U	U	U	U
St. Louis, Mo.	107	79	13	8	2	-	5	Pasadena, Calif.	29	24	3	1	1	1	3
St. Paul, Minn.	49	36	9	2	-	-	2	Portland, Oreg.	122	83	18	12	6	3	3
Wichita, Kans.	42	26	10	2	1	3	-	Sacramento, Calif.	145	103	24	10	3	5	17
								San Diego, Calif.	149	95	15	22	11	5	6
								San Francisco, Calif.	151	84	34	29	3	1	3
								Seattle, Wash.	142	94	22	16	6	4	2
								Tacoma, Wash.	53	43	5	2	2	1	6
									54	35	14	5	-	-	5
								TOTAL	11,392	7,200	2,168	1,202	483	333	544

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

^tPneumonia and influenza.

^sBecause of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

[†]Total includes unknown ages.

[§]Report for this week is unavailable (U).

Physical Education — Continued

Islands. Students were asked 1) if they were enrolled in PE classes, 2) how many days they had attended PE classes during the past 2 weeks, and 3) during how many PE classes they had engaged in at least 20 minutes of light to heavy exercise during the past 2 weeks.

Of all students in grades 9–12, 43.5% of males and 52.0% of females reported that they were not enrolled in PE classes (Table 1). In addition, 21.5% of students (males, 24.1%; females, 19.0%) reported that they attended PE classes daily. Daily attendance in PE classes decreased substantially from 9th grade through 12th grade (9th grade, 34.4%; 10th grade, 25.7%; 11th grade, 15.1%; and 12th grade, 10.9%).

Of students who reported attending PE class during the past 2 weeks, about one third (33.2%) reported exercising 20 minutes or more in PE class three to five times per week (Table 2). Almost one fourth (23.4%) reported that they did not exercise 20 minutes or more during any PE class. Females (28.5%) were significantly more likely than males (18.6%) to report not exercising 20 minutes or more during any PE class during the past 2 weeks.

Reported by: Div of Chronic Disease Control and Community Intervention, Div of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: One of the national health promotion and disease prevention objectives for the year 2000 (objective 1.8) is to "increase to at least 50 percent the proportion of children and adolescents in 1st through 12th grade who participate in daily school physical education" (8). The findings in this report indicate that, to attain this objective, the percentage of 9th–12th-grade students attending daily PE classes must markedly increase. However, enrollment in PE, a necessary prerequisite for attendance in PE classes, may have decreased (Figure 1), from a total of 65% in 1984 to 48% in 1990 (based on a comparison of findings in this report with results from the 1984 National Children and Youth Fitness Study [9]).

To develop healthy physical activity patterns, students must not only attend PE classes but also engage in physical activity during those classes. Specifically, national

FIGURE 1. Percentage of high school students enrolled in physical education classes, by student grade and by survey — United States, 1984 and 1990

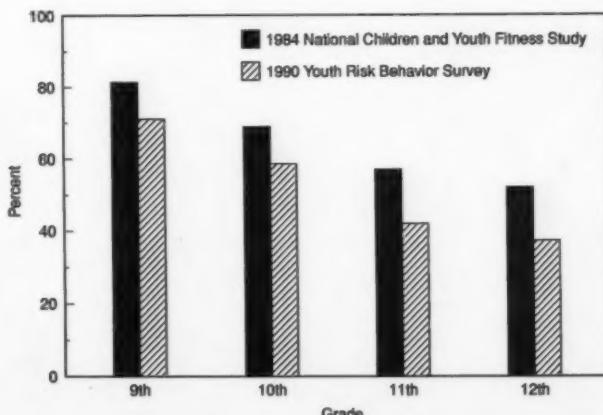


TABLE 1. Percentage of high school students attending physical activity — United States, Youth Risk Behavior Survey, 1990*

Grade	Male		Female		
	Not enrolled	Attend daily	Not enrolled	Attend daily	
%	(95% CI) [†]	%	(95% CI)	%	(95% CI)
9th	24.1 (16.9-31.4)	38.9 (30.3-47.5)	33.1 (22.1-44.1)		
10th	36.6 (27.2-46.0)	26.7 (19.6-33.8)	46.2 (34.8-57.6)		
11th	52.4 (42.2-62.7)	19.6 (13.2-26.0)	62.9 (51.2-74.7)		
12th	58.1 (46.1-70.1)	13.5 (6.9-20.1)	68.2 (56.3-80.0)		
Total	43.5 (35.2-51.8)	24.1 (18.5-29.7)	52.0 (42.4-61.6)		

*Unweighted sample size = 11,631 students. Categories do not total 100% included in this table.

[†]Confidence interval.

TABLE 2. Percentage of high school students who exercised ≥2 hours per week — United States, Youth Risk Behavior Survey, 1990*

Grade	Male		Female		
	0 days/week	(95% CI) [†]	3-5 days/week	(95% CI)	
%	(95% CI)	%	(95% CI)	%	(95% CI)
9th	23.7 (19.1-28.2)	36.4 (28.2-44.7)	28.8 (24.3-33.3)		
10th	17.1 (13.2-21.0)	38.4 (27.2-49.7)	27.1 (21.6-32.5)		
11th	14.0 (10.4-17.6)	40.0 (24.9-55.2)	25.2 (17.7-32.7)		
12th	17.9 (11.0-24.8)	34.4 (18.2-50.5)	34.5 (20.0-48.9)		
Total	18.6 (15.2-22.1)	37.4 (26.9-47.8)	28.5 (24.7-32.4)		

*Students reported that they attended PE class during the previous 2 weeks.

[†]Unweighted sample size = 5642 students. Categories do not total 100% not included in this table.

[†]Confidence interval.

ysical education classes, by gender and grade of student —

Female		Total			
CI)	Attend daily	Not enrolled		Attend daily	
(95% CI)	%	%	(95% CI)	%	(95% CI)
4.1)	30.8 (23.6–38.0)	28.9 (20.1–37.8)	34.4 (27.3–41.5)		
7.6)	24.8 (18.1–31.5)	41.4 (31.5–51.3)	25.7 (19.5–31.9)		
4.7)	11.1 (7.2–15.0)	58.0 (47.4–68.6)	15.1 (10.4–19.8)		
0.0)	7.8 (2.9–12.7)	62.7 (51.6–73.8)	10.9 (6.2–15.6)		
1.6)	19.0 (15.3–22.6)	47.8 (39.1–56.5)	21.5 (17.1–25.8)		

100% because students who reported taking PE less than daily are not

I ≥20 minutes during physical education classes,* by gender
Survey, 1990†

Female		Total			
CI)	3–5 days/week	0 days/week		3–5 days/week	
(95% CI)	%	%	(95% CI)	%	(95% CI)
3.3)	31.2 (23.3–39.1)	26.5 (23.2–29.9)	33.6 (26.2–41.0)		
2.5)	30.1 (22.1–38.0)	21.9 (18.6–25.2)	34.4 (26.2–42.6)		
2.7)	29.2 (18.1–40.2)	19.2 (15.7–22.7)	35.0 (22.4–47.6)		
8.9)	18.8 (8.4–29.1)	24.5 (15.5–33.6)	28.1 (16.1–40.1)		
2.4)	28.6 (21.3–35.9)	23.4 (20.5–26.3)	33.2 (24.5–41.8)		

* 2 weeks.

100% because students who reported taking PE 1–2 days per week are

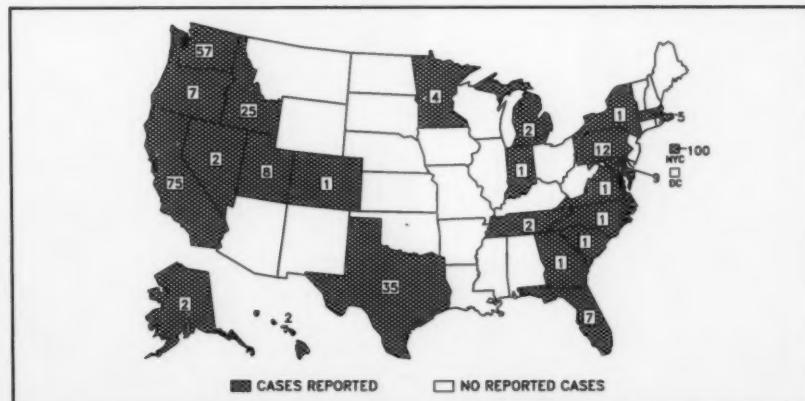
Physical Education – Continued

health objective 1.9 aims to "increase to at least 50 percent the proportion of school physical education class time that students spend being physically active, preferably engaged in lifetime physical activities" (8). Findings in this report indicate that the amount of PE class time devoted to physical activity is substantially below this goal.

To improve the health of youth through PE, parents, teachers, school administrators, school board members, pediatricians, family physicians, and public health officials need to implement policies that ensure every student's enrollment and participation in daily PE programs and develop programs that provide at least 20 minutes of daily physical activity (10).

References

- Powell KE, Thompson PD, Caspersen CJ, Kendrick JS. Physical activity and the incidence of coronary heart disease. *Annu Rev Public Health* 1987;8:253-87.
- Paffenbarger RS Jr, Wing AL, Hyde RT, Jung DL. Physical activity and incidence of hypertension in college alumni. *Am J Epidemiol* 1983;117:245-57.
- Heimrich SP, Ragland DR, Leung RW, Paffenbarger RS Jr. Physical activity and reduced occurrence of non-insulin-dependent diabetes mellitus. *N Engl J Med* 1991;325:147-52.
- Kohl HW, LaPorte RE, Blair SN. Physical activity and cancer: an epidemiological perspective. *Sports Med* 1988;6:222-37.
- Taylor CB, Sallis JF, Needle R. The relation of physical activity and exercise to mental health. *Public Health Rep* 1985;100:195-202.
- Paffenbarger RS Jr, Hyde RT, Wing AL, Hsieh CC. Physical activity, all-cause mortality, and longevity of college alumni. *N Engl J Med* 1986;314:605-13.
- Colbe LJ. An epidemiological surveillance system to monitor the prevalence of youth behaviors that most affect health. *Health Education* 1990;21:44-7.
- Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives—full report, with commentary. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991:101-3; DHHS publication no. (PHS)91-50212.
- Ross JG, Dotson CO, Gilbert GG, Katz SJ. The National Children and Youth Fitness Study: what are kids doing in school physical education? *Journal of Physical Education, Recreation, and Dance* 1985;56:73-6.
- Sallis JF, McKenzie TL. Physical education's role in public health. *Research Quarterly in Exercise and Sports Sciences* 1991;62:124-37.

Reported cases of measles, by state – United States, weeks 31–34, 1991

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and is available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 783-3238.

The data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. Inquiries about the *MMWR* Series, including material to be considered for publication, should be directed to: Editor, *MMWR* Series, Mailstop C-08, Centers for Disease Control, Atlanta, GA 30333; telephone (404) 332-4555.

Director, Centers for Disease Control
William L. Roper, M.D., M.P.H.
Director, Epidemiology Program Office
Stephen B. Thacker, M.D., M.Sc.

Editor, *MMWR* Series
Richard A. Goodman, M.D., M.P.H.
Managing Editor, *MMWR* (Weekly)
Karen L. Foster, M.A.

★U.S. Government Printing Office: 1991-531-130/42031 Region IV

**DEPARTMENT OF
HEALTH AND HUMAN SERVICES**

Public Health Service
Centers for Disease Control
Atlanta, Georgia 30333

Official Business
Penalty for Private Use \$300

A 43106SER 068639 9
SERIALS ACQUISITION DEPT X
UNIVERSITY MICROFILMS
300 NORTH ZEEB ROAD
ANN ARBOR, MI 48106

FIRST-CLASS MAIL
POSTAGE & FEES PAID
PHSC/DC
Permit No. G-284

